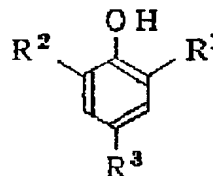


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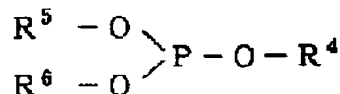
I

APPLICANT : MITSUBISHI CHEM CORP;

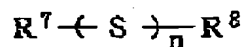
INVENTOR : OKAHARA KENJI;

INT.CL. : H01M 10/40

TITLE : NONAQUEOUS ELECTROLYTE AND
 SECONDARY BATTERY USING IT



II



III

ABSTRACT : PROBLEM TO BE SOLVED: To prevent a thermal runaway at abnormal time such as overcharge and a short circuit by containing one or more kinds of phenol type, phosphite type and sulfide type antioxidants with the specific concentration in an electrolytic solution by dissolving electrolyte in a solvent having a specific dielectric constant or an electrolytic solvent by mixing a solvent having specific viscosity with this.

SOLUTION: In order to improve a high dielectric constant solvent having a specific dielectric constant not less than 50 and electric conductivity, electrolyte such as lithium salt is dissolved in an electrolytic solvent by mixing a low viscosity solvent having viscosity not less than 1 centipoise at 25°C with this. One or more kinds of a phenol type antioxidant of a formula I, a phosphite type antioxidant of a formula II and a sulfide type antioxidant of a formula III are contained by 0.01 to 10wt.% in this electrolytic solution, and react with an active organic radical generated by active oxygen released at abnormal time of a battery. In the formulas I, II, and III, R¹ is a hydrocarbon radical having the carbon number not less than 4, and R² and R³ are hydrogen or an electron imparting group, and R⁴ and R⁷ are a hydrocarbon radical having the carbon number not less than 3, and R⁵, R⁶ and R⁸ are a hydrocarbon radical, and (n) is 1 or 2.

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